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Shifting the Medical Physics Profession Back to Research: An Innovative Cost-Neutral Remote Ph.D. Program for ABR-Certified Clinical Physicists with Master's Degrees - a Six-Year Experience

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ABSTRACT

Purpose: To report on the success of an innovative academic program which provides an educational opportunity for ABR-certified medical physicists interested in obtaining a Ph.D. degree while remaining employed, allowing them to engage more actively in research activities and pursue academic positions.

Methods: Along the lines of the Medical Physics 3.0 initiative to shift the profession back towards research, an increasing number of ABR-certified practicing physicists with Master’s degrees and heavily motivated to engage in research are looking for opportunities to pursue a Ph.D. degree while remaining employed full-time. Our institution opened a Remote Professional Ph.D. Program for such individuals, with first student matriculated in 2020. Besides regular admission requirements, the program requires applicants to hold active ABR certification, assume full responsibility to pay all tuition and fees, and to present a letter of understanding from their employer stating that the applicant will be allowed to perform experiments using the employer’s facilities. Students are required to register as remote part-time students and are matched with a faculty member who becomes the research advisor.

Results: Eleven students have been admitted to date. Employers include both large academic as well as smaller clinical institutions. Five students are in-state, the rest reside in six different states. As of the 2025-2026 academic year, four students have graduated from the program. Because students are self-funded, the program is revenue-producing and has been well received by the College and University.

Conclusion: A remote Ph.D. program for clinical physicists to acquire training in research can be successfully implemented by medical physics graduate institutions in the country,

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INTRODUCTION

Among the various initiatives of Medical Physics 3.0¹, the shifting of the profession back to a focus on sustainable research (both basic and clinical) requires for our profession to replenish the research workforce through adequate education and training. Historically, the constant demand for clinical physicists has always steered a sizeable portion of students in Medical Physics Graduate Programs (MPGPs) towards terminal Master’s (MS) degrees and a shorter path to certification by the American Board of Radiology (ABR). However, an increasing number of these practicing physicists are heavily motivated to engage in research, but lack the preparation and experience to lead research projects or find institutional roadblocks to engage in research. These practicing physicists are constantly looking for educational opportunities to pursue a Ph.D. degree while remaining employed full-time and thus, be able to maintain financial stability and quality of life while avoiding employment gaps.

METHODS AND MATERIALS

The MPGP at the University of Florida (UF) is affiliated with the College of Medine, and it offers both MS and PhD degrees and has held CAMPEP accreditation for 25 years. During the pandemic in 2020, remote video conferencing platforms became more robust and reliable, making it possible for faculty advisors to meet remotely with graduate students to review progress on their research projects. With this is mind, the UF MPGP leadership ventured into a remote Ph.D. program to accommodate ABR-certified practicing physicsts wanting to continue their graduate education, with the first student matriculated that same year. Applicants must meet the following requirements for admission:

- Hold active ABR certification in any of the medical physics subspecialties;

Table 1. MS Degree and Certification Information of Admitted Students

Student	MS Degree Major	Year MS Degree Awarded	ABR Certification Specialty	Year of ABR Certification	Years of Clinical Experience at Admission
A	Medical Physics	2006	Therapy	2010	14
B	Nuclear Physics	2007	Therapy	2014	14
C	Medical Physics	2011	Therapy	2014	10
D	Medical Physics	2008	Therapy	2013	13
E	Medical Physics	2019	Therapy	2022	5
F	Medical Physics	2010	Therapy	2013	12
G	Medical Physics	2014	Therapy	2019	9
H	Medical Physics	2000	Therapy	2008	22
I	Medical Physics	2012	Diagnostic	2011	12
J	BME	2008	Therapy	2013	12
K	Medical Physics	2019	Therapy	2022	6

- MS degree in medical physics or similar major;
 - Secure a faculty advisor from the program;
 - A letter of understanding from employer stating acknowledgement that student is applying for admission and that student will be allowed to use the employer’s facilities to perform experiments;
 - Letter from applicant assuming full responsibility to pay for all tuition and fees;
 - Pass a Medical Physics Comprehensive Examination on all basic areas of medical physics;
 - All other regular Graduate School requirements
- Students are required to register as remote part-time students for an average of six research credits per semester. Completion of the degree follows regular guidelines and requirements by the graduate school and university, including:
- Complete a minimum of 60 credits post-MS level
 - Passing a Candidacy Exam
 - Submit two manuscripts for publication of the research work, with at least one them published;
 - Complete a Doctoral Dissertation after completing all aims of the research project
 - Succesfully defend the dissertation.

RESULTS

Table 1 shows the MS degree majors and ABR certifications of applicants admitted into the program. Eleven students have been admitted to date, as shown in Table 2, with four students graduated as of the current academic year. Employers include both large academic as well as smaller clinical institutions. Five students reside in Florida, with the rest residing in different states, as shown in Table 3. A post-graduation survey is being prepared to evaluate the impact that the doctoral degree has had in the professional career of graduates from the program. As of this academic year, two of them have been appointed Associate Directors of the Residency Programs at their respective institutions.

Table 2. Program Statistics. Admissions and Graduations

Academic Year	Applicants Admitted	Students Graduated
2020-2021	1	-
2021-2022	3	-
2022-2023	2	-
2023-2024	2	-
2024-2025	1	2
2025-2026	2	2

Table 3. Geographical locations of Professional PhD students

US GEOGRAPHICAL REGION	NUMBER OF STUDENTS
Southeast	7 (5 in-state)
Northeast	1
Southwest	1
Midwest	1
Northwest	1

DISCUSSION

The Remote Professional Ph.D. program at the University of Florida has been a success, as it has now entered a stable operation. An average of two graduations per year are expected. With about 12-14 MS and 16-18 PhD students in our traditional MPGP program, the factor limiting admission into the Remote Professional program is the limited number of faculty advisors. A faculty coordinator is exclusively assigned to monitor and oversee the progress and well-being of these students, as handling full-time jobs, family lives and graduate studies can be quite challenging and emotionally and mentally taxing. With the infrastructure of the MPGP in place and because students are self-funded, the program is revenue-producing and highly profitable and thus has been well received by the College and University.

CONCLUSIONS

A remote Ph.D. program which provides an opportunity for actively employed clinical medical physicists to acquire training and experience in academic research can be successfully implemented by existing accredited MPGPs on a financially-neutral model utilizing existing program resources.

REFERENCES

- Samei E, Pawlicki T, et al. (2018), Redefining and reinvigorating the role of physics in clinical medicine: A Report from the AAPM Medical Physics 3.0 Ad Hoc Committee. Med. Phys., 45: e783-e789.

